



MEETING MINUTES

HANFORD ADVISORY BOARD (HAB)

Tank Waste Committee (TWC)

May 12, 2021

Virtual Meeting via Microsoft Teams

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This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Opening

Ruth Nicholson, HAB Facilitator, welcomed meeting participants and invited them to sign in through the Microsoft Teams chat function. She explained the preferred method of queuing for questions and comments and stated the meeting would be recorded.

Stan Branch, US Department of Energy (DOE), announced that this meeting was being held in accordance with the Federal Advisory Committee Act.

The TWC adopted the draft summary of the February 2021 TWC meeting with no comments.

Bob Suyama, Benton County and TWC chair, discussed agenda items for the day's meeting.

Immobilized Low-Activity Waste Transporter

Gary Younger, DOE, introduced the presenter for the Immobilized Low-Activity Waste (ILAW) Transporter topic, Bibek Tamang, DOE.

Bibek opened with a safety topic: Open communications. He stated that open communications are beneficial in that they foster an environment free from retribution and establish high levels of trust within organizations, in addition to providing the benefits of discovering and correcting potential issues early. He felt that every industry and organization benefits from strong, open communications. Means of improving communications defined included defining of team goals such that all participants can cooperate in their achievement and seeking suggestions from management and coworkers. He noted that presentations, such as the one he was providing, worked toward the goal of open communication.

Bibek introduced the ILAW transporter system and its purpose. The ILAW transport system was a critical system for the Direct-Feed Low Activity Waste (DFLAW) program, serving to transport packages from the Waste Treatment Plant (WTP) to the Integrated Disposal Facility (IDF)

The ILAW transport system included the ILAW packages, pallet, and trailer pulled by a semi-truck. The ILAW package consisted of a stainless-steel container that would contain vitrified low-activity waste (LAW) and was placed upon a pallet; a carbon steel cylinder welded to a square base. These were transported on a commercial open-frame drop-deck trailer that was modified with twist locks.

The initial design prototype for the ILAW transport system was developed in 2017 and subsequently fabricated in 2018. The complete testing, design finalization, and procurement began in 2019, with complete fabrication, commissioning, and turnover to Central Plateau Cleanup Company (CPCCo) through 2020 and 2021.

Bibek provided detailed photos of the system. He explained the structure of the ILAW pallet in further detail. He noted that it is operated by a jackscrew gearbox and featured channels through which air can flow, serving as means of cooling waste containers. Following, he discussed the ILAW trailer. It featured electric landing gear and a backup crank handle.

He detailed the designated transport route between the WTP and IDF. The route was approximately 1.5 miles in length and allowed for a maximum of speed of 35 mph. The feasibility of the route was tested using the prototype ILAW pallets and trailers. Sharp turns were tested and proven to be achievable without issue. The team also tested hooking and unhooking the pallets by tractor and ergonomics in operation. A battery drainage issue was discovered in testing, which could lead to battery failure. The issue was corrected by adding a backup battery and solar charging capabilities.

Over the testing period, the team examined dust and debris buildup over several months and found it to be negligible. Rain infiltration was also found to be negligible. Thermal and heat transfer testing was performed and found to be within expected limits with no damage from heat transfer.

ILAW containers were loaded onto pallets by crane, which would then be moved by forklift to a staging area to cool when reaching their destination. The passive airflow feature in the pallets served as a passive cooling system, allowing the packages to cool from the 345 degrees Fahrenheit, as they were at loading, to the required 160 degrees Fahrenheit.

Regulatory Perspectives

The present representatives for the Washington State Department of Ecology (Ecology) had nothing to add.

Committee Discussion

Bob asked about the frequency of transport from WTP to the disposal site. Bibek stated that the WTP expects to produce 30 metric tons of glass each day and the ILAW containers hold 6 tons each. Based on that, he expected that two loadings and transports would be the necessary number of daily transports.

Pam Larsen, City of Richland, asked for clarification regarding the procedure upon the truck reaching the IDF. Bibek confirmed that the ILAW pallet would be unloaded, allowed to cool in the staging area until it reached the temperature of the geothermal liner, then the reloaded for the next transport. The containers are ultimately planned for burial.

Liz Mattson, Hanford Challenge, asked how long the ILAW packages would take to cool. Bibek stated that simulations showed that it would take approximately 54 hours to cool but was dependent on weather conditions. Liz wondered if a shift to evening work would be required for the summer due to high ambient temperatures. Bibek noted that that was outside of his scope of work and that the transport operations would be overseen by the IDF site. Liz asked how many pallets could be stored in the staging area. Bibek expected that there would be five containers placed daily and that the staging area allowed for 43 in total.

Dan Solitz, Oregon Hanford Cleanup Board, asked for clarification, wondering if the pallets were cooled on the trailer. Bibek stated that the staging area that they were unloaded to was designated staging area for that purpose, located outside of the IDF.

Rob Davis, City of Pasco, asked if the LAW containers were sealed or if there was a potential for out-gassing, wondering if that would be a concern in transport. Bibek stated that he was unsure as it was outside the scope of his project, agreeing to look into it.

Bob asked how radioactively hot the outside surfaces of the pallets were. Bibek believed the annual dose rate for drivers to be approximately 500mrem, half of the allowed annual dose rate. Bob followed up, asking if there was shielding in the pallet. Bibek confirmed that there was not, only shielding in the cylinder. Bob asked if the system was ready for turnover to operations. Bibek confirmed that it was.

Next Steps

Rob hoped to have a better understanding of operations at IDF, such as the use of personal protective equipment (PPE) and shielding concerns.

Dan wanted additional information on secondary waste, both at the WTP loading site and IDF. Ruth noted that DOE may be working on an IDF and Environmental Restoration Disposal Facility (ERDF)

presentation for the River and Plateau Committee (RAP) for the August timeframe of that year, which could overlap with TWC concerns. She agreed to inform TWC if applicable.

Leadership Workshop Update

Bob updated the committee on the outcomes of the recent Leadership Workshop. He noted that the group within the workshop reviewed the proposed draft Fiscal Year 2022 calendar and work plan for the HAB. A notable discussion held involved the arduous process of obtaining DOE Headquarters approval for DOE presentations. As a result, Bob wanted the committee to consider the process and timeline when preparing their committee work plan and calendar, allowing DOE the necessary time to prepare presentations and obtain approval.

Additionally, Bob noted that it was requested that the HAB provide advice that is considered actionable, ideally for items that are two to three years out in order to provide DOE the necessary time to act upon the advice.

Bob presented the calendar and provided the committee a month-by-month walkthrough of the planned events. He noted that there was less time committed to committee meetings in comparison to previous years, which could present challenges in achieving the committee's goals for the year. Bob invited the committee to point out potential date conflicts in relation to other events relevant to members.

Ruth clarified that the calendar being presented was a draft that was expected to undergo further revision. She also noted additional dates of importance, such the timing for the orientation for new HAB member orientation and a Committee of the Whole meeting. Gary added that, despite the reduced number of formal committee meetings, committee members were now permitted to hold their own unfacilitated meetings at will. These unfacilitated meetings would be entirely organized by the committee members at a time and by method of their choosing, effectively providing an unlimited number of meetings and ensuring that committees have the appropriate time provided to work through tasks and topics. Additionally, Gary noted that DOE was working to allow for additional unsupported discussion time, such the discussion on the Government Accountability Office (GAO) Report scheduled for discussion that same meeting. DOE hoped to empower committees as much as possible while accounting for restrictions and allowing flexibility.

Liz asked if unfacilitated meetings required scheduling with the facilitation team. Gary confirmed that they did not.

Bob noted that committee call placeholders were not listed on the calendar. Gary clarified that they needed to finalize primary calendar items before they could schedule the call placeholders. He reiterated that the calendar being presented was a work in progress.

Bob wondered how to go about scheduling an Issue Manager (IM) call if an IM team required facilitation. Gary confirmed that the IM team leader would contact him and scheduling would be determined on a case-by-case basis, based on availability.

Ruth noted that the new HAB library location had meeting spaces available for IM teams. She also noted that she would prefer that committee call placeholders be placed on the calendar three weeks prior to committee meetings, allowing the facilitation team to prepare and distribute meeting agendas two weeks prior to the meetings.

Shelley Cimon, Columbia RiverKeeper, introduced herself and discussed her recent participation in a national Site-Specific Advisory Board (SSAB) meeting. She invited the committee to think outside of Hanford to the program level. She noted that DOE's ten-year strategic vision had been released recently,

hoping for the committee to look beyond the Hanford Site's five-year plan to see how it fit into the larger vision and find new opportunities. She noted the potential of receiving stimulus money under an anticipated infrastructure plan and considered the option of tapping into that money for Hanford Site infrastructure upgrades.

She noted that another member of the SSAB meeting asked about mandatory vaccinations, and there did not appear to be any plans in that regard. She learned through the round-robin discussions that the Idaho site recently dismantled its super compactor, a tool that could have been put to use at the Hanford Site. She wanted the committee to consider how they could get ahead of decisions like that and to prevent the loss of programmatic assets; what was available throughout the DOE complex; and how to programmatic assets throughout the complex could be utilized at Hanford.

Retrieval of Tanks AX-102 and 104

Peggy Hamilton, Washington River Protection Solutions (WRPS), was joined by Ricky Bang, DOE, to provide a presentation on the Single-Shell Tank (SST) retrieval status and path forward.

Peggy started with a safety message regarding the use of operation experience. She expressed that a considerable amount of high-risk work had been done, which provided the opportunity to examine past operating experience to find means of improvement. They should consider the feedback received, lessons learned, and input from cross-functional organizations and subject matter experts (SMEs).

The primary topics of the briefing included the status of SST retrievals and the related HAB work plan topic of tank closure progress. Specifically, it included:

- An update on retrieval status of Tanks AX-102 and AX-104
- The path forward for Tanks AX-102 and AX-104
- Lessons for future A/AX tank farm waste retrievals
- Status of construction for next retrievals

Peggy showed a map of the AX Farm and discussed the location of Tank AX-102 and 104. She noted that the two tanks were "dish bottom" tanks, a design that coincided with certain waste flow tendencies.

Tank AX-102 initially contained 30,000 gallons of saltcake and sludge, which was retrieved by use of extended reach sluicing and high-pressure water technologies. The limits of the technologies were reached for this tank in January of 2020, at which point the project was seeing significantly diminished returns.

Tank AX-104 contained 5,000 gallons of sludge which was also retrieved by use of extended reach sluicing and high-pressure water technologies. The limit of the technology was reached in February of 2021.

Peggy displayed photos of Tank AX-102 prior to and following retrieval, demonstrating the effectiveness of the methods. Post-retrieval, the tank had visibly clean walls and the floor for the tank was visible. She provided an explanation for each item that could be seen in the photos, noting the methods utilized in waste retrieval and the challenges operators faced as a result of camera obstructions. She discussed lessons learned from previous retrieval efforts in the C Farms, such as implementation of pump capable of retrieving waste within half of an inch from the bottom on the flat-bottomed tank, ensuring they could retrieve sludge within the 3/4-inch requirement for remaining waste. Additional cameras were added to the tank to assist operators in manipulating equipment around visual obstructions.

Moving to photos of AX-104, Peggy discussed how the team added approximately 15,000 gallons of caustic liquids on top of the 5,000 gallons of sludge in order to protect the equipment within the tank, which has the additional benefit of breaking up sludge and salt cake.

She noted that C Farm utilized a supernate retrieval method in which they recycled supernatant from the double-shell tank (DST) farm. The supernatant was injected into the SSTs to mobilize the waste and allow it to be pumped, then the supernatant was pumped back to the DST farm. This benefited the retrieval efforts in that the method by reducing the amount of water that would need to be added, resulting in less new waste creation. For the AX Farm, water was used selectively, where it was believed to have the most benefit, and usage was reduced where it resulted in less waste retrieval. The amount of water used was controlled using “batch modes,” a new technique for tank waste retrieval. Among the lessons learned was the new technique that consisted of pumping waste back in for a motor force, which created less waste in the process, but left more waste in the tank.

Following retrieval, the team generated residual volume estimates and examined the practicability of deploying a third retrieval technology, considering the cost versus the volume of new waste likely to be retrieved. Peggy anticipated that the related report would be submitted to DOE in the coming weeks.

The next retrievals planned were Tanks AX-103 and AX-101, containing 104,000 and 323,000 gallons of waste respectively, primarily consisting of saltcake. Construction for AX-103 was in the final stages with retrieval expected to begin in July 2021. Construction was underway for AX-101 with retrieval anticipated in 2022. Each would utilize sluicing and high-pressure water technologies, with the expectation that batches would run longer than previous tanks due to salt cake density.

Within the A Farm, the tank ventilation system was installed and operating and utility upgrades were underway. Retrieval from the first A Farm tank was anticipated to begin in 2024.

In conclusion, it was stated that the teams involved were making excellent progress in retrieving waste from the A and AX tanks. Lessons learned were being effectively identified and applied to future operations.

Regulatory Perspectives

Kyle Rucker, Ecology, noted that he has received the End of Retrieval Report, which was still in review. He noted that they were currently waiting for sampling results from the tanks, potentially due to a laboratory backlog.

Committee Discussion

Bob stated that he was impressed by the progress made. An item he wished to see in the future was the status of residuals in the tanks, noting that it was key information for closure. He asked for additional details on the caustic liquid used, wondering if it was something that would be used again in the future. Peggy stated that it did help in AX-104 due to the low total waste volume it started with, however, in the case of AX-103, it would have used up too much of the available DST space. It would pay better dividends where there was less waste to start with and would be examined on a case-by-case basis going forward.

Jeff Burrig, Oregon Department of Energy, provided several questions. First, he was interested in the efficiency of spraying caustic liquid on tank walls to break up waste content. Peggy stated that the efficacy was tested in AX-104, but there was no significant change in ease of pressure washing waste of the walls. However, it did help in removing waste from the stiffener rings.

Jeff asked what the best option would be for a potential third retrieval technology. Peggy noted that the option of using acid-based methods was explored, but had many detriments associated with it, such as the need to keep tanks in a certain pH range. Jeff wondered if there were any technologies in development and of interest to Peggy's team. Peggy stated that they were always looking for new options and were at the time actively exploring multi-purpose pump options with the ability to macerate or size reduce waste chunks and capture waste at the pump. Additionally, they were looking at dry-based technologies to replace the wet-based technologies in use, which was a desire by Ecology that they were actively working toward.

Liz asked for clarification on how much waste remained in each of the tanks. Peggy stated that AX-102 contained 393 cubic feet of material and that AX-104 could not be measured at the time, as it needed to dry out. Measurements for AX-104 were expected in July 2021.

Pam noted staffing challenges that the 324 Building project was facing, wondering if that was an obstacle faced by the Tank Farms as well. Peggy stated that it was, to an extent, as it was a challenge faced site wide as a result of the COVID pandemic. She discussed measures taken to mitigate COVID-related concerns, including allowing teleworking for professional staff, which in turn allowed for on-site employees to socially distance, as well as the installation of new facilities to house workers. COVID had some impact, but it was manageable.

Bob asked about tanks with the A and AX farms that were known to leak. Peggy stated that the contents of each tank were solidified, which was confirmed by camera, with only two tanks known to leak within the farms. Bob asked if extra precautions were in place. Peggy stated that those two tanks were placed at the end of the retrieval sequencing, with the hope that a dry-based retrieval technology could be implemented by that time. Due to the separation of the tank floor from the wall, substantial amounts of liquid could not be used in retrieval. Bob asked about the time frame for retrieval for all tanks within the farm. Peggy stated that it was expected to occur within the mid-2020s but was unsure of the precise date.

Jeff asked how about the likelihood of dry-based retrieval tools being ready by the mid-2020s. Peggy stated that they were working hard on them, and it was a tight window of time to achieve, but they were hopeful that they would be ready. Jeff considered the option of leaving the waste for retrieval at a later time. Peggy stated that the option would need to be discussed with the Tri-Party Agreement (TPA) agencies, as it was part of the Consent Decree to retrieve the waste.

Jeff posed a hypothetical situation in which an SST had a leak and was a big deal such that all involved parties agreed that it needed to undergo waste retrieval as soon as possible but lacked the infrastructure to do so. He asked, in this instance, how long mobilization would take. Peggy stated that she would need to defer the question, noting that it would require analysis of portable power viability and could face procurement issues, among other factors that would need consideration. She estimated that design would take a year to a year-and-a-half, and procurement could occur following initial design stages. It would take up to one year to build. She estimated four to five years to initialize retrieval where there was no infrastructure. She noted that, among the lessons learned from C Farm, was that it was better to build infrastructure for an entire farm rather than individual tanks, so the first tank would have the longest lead time as a result.

Rob asked for clarification on the leftover waste within the tanks. Peggy clarified that the bottom of the tank still contained sludge and residual salt cake, which was high-level waste.

Shelley wondered about the availability of steel on the market at the time, recalling another discussion on the ability to procure materials. Peggy stated that certain components have long lead times, but the teams

knew to order them early in the design cycle so they are ready in ample time. Equipment for upcoming tanks was already on site, and A Farm materials had already been purchased.

Shelley requested additional information on procurement, wondering how much work was done by contractors as opposed to DOE in building or maintaining a stockpile of required items. Peggy stated that the work was done under the purview of DOE and was not proprietary. They reach out to “sister sites” that may be doing or have done equivalent work, using the example of having received waste retrieval tips and lessons learned from the Savannah River Site. Shelley recalled a former site technology transfer group that was looking at options for commercial off-the-shelf (COTS) equipment that could be utilized and wondered if that was still a practice. Peggy stated that WRPS had a group that hosted technology exchange events with other sites and regularly put out expressions of interest (EOI) for COTS technology that could be modified for use on the Hanford Site. She noted that many COTS products could not survive in tanks, but looked to oil and gas and other commercial industries for equipment that could be adapted to survive in a radiological environment.

Liz asked if additional funding could speed up tank retrieval efforts, perhaps through increased crew sizes, additional equipment, or parallel retrieval efforts. Peggy stated that there were some instances where additional funding could help, but it had limitations on how effective it could be. Examples included considerations around tank chemistry and effects on downstream processes, potentially creating additional work elsewhere. In the case of equipment, if prepared too early, it would just sit there and age prior to use. She stated that, were stimulus money available, the best use might be to determine the next farm to retrieve waste from and prepare the infrastructure.

Ricky clarified that, in looking at the Site in its present state and the Office of River Protection (ORP) mission, which focuses on risk reduction, they would be well served by using additional funds to find means of reducing risk in a more efficient manner.

Liz wondered if there were ideas in-place for its use or things that would need further exploration. Peggy stated that the primary limiting factor was the time required to install infrastructure. The supplies could be obtained quickly, but they were limited by the time it would take to do the hands-on work involved in installation.

Pam stated that she was an advocate of the Hanford Test Bed Initiative and wondered if something to consider for leaking tanks could be the installation of Tank-Side Cesium Removal (TSCR) equipment that could separate cesium and strontium, potentially allowing some of the waste to be grouted and shipped to an applicable landfill in Texas. Ricky stated that the option was undergoing study and in the budget for the second phase of the Test Bed Initiative. Brian Harkins, DOE, offered perspective, noting that the liquid within the SSTs was nominally interstitial liquid that had already been pumped to the extent reasonable. Leaks would move so slowly that liquid would not affect the remaining content of the tanks in a substantial manner. The Test Bed Initiative was intended for installation of a pump and exchange column to pull supernate off the top, which is not present in those tanks.

Bob noted that a residual analysis was planned and requested an update when the waste volumes for both AX-102 and 104 were known, as well as an update on the analysis for use of a third retrieval technology. Peggy stated that she would be willing to return for that update.

B-109 Update

Carrie Meyer, DOE, provided an update on the leaking tank designated B-109, located in the B Complex area. Due to observed readings of a slow reduction in liquid volume, a leak assessment was conducted on

the tank. She noted that this tank was previously stabilized in the 1980s such that the only remaining liquid consisted of interstitial liquid within the salt cake layer.

She highlighted that the discovered leak did not represent an increased risk to the public or the Hanford Site workforce. This was because, within the B Complex area, soils were already highly contaminated as a result of previous Hanford Site operations. As a result, pump and treat systems were already in place and in operation.

B-109 was a 530,000-gallon tank that received contaminated liquids between 1946 and 1976. It had an estimated 15,000 gallons of liquid waste as part of its total waste volume of approximately 123,000 gallons, which primarily consisted of solid sludge and salt cake. The source of the leak within the tank was presently unknown and suspected to consist of residual liquids.

The water table was located 210 to 240 feet beneath the tank. Extraction wells were in place near the tank to extract liquids, which would be subsequently cleaned and reinjected. Additionally, the area was surrounded by monitoring wells, which to that point had not detected anything that would indicate a leak; the potential leak was determined entirely by volume readings within the tank. Carrie stated that DOE believed that the ongoing pump and treat operations were the best approach to mitigating the potential leak. She noted that it would be 25 years or more before a contaminant could reach groundwater. DOE would continue to monitor and reassess the situation as necessary.

Bob asked if there were other tanks that had been previously stabilized and pumped dry known to leak or facing a similar problem. Carrie stated that there were presumed leakers, and as a result, there was in place a robust monitoring program. There had been no indication through soil or level monitoring that indicated other leaks.

Gerry Pollet, Heart of America Northwest, stated that the information provided in the updated was not satisfying, as it consisted of the same information available within a news release. He was particularly concerned over the belief that there was no increased risk and that the existing pump and treat operations were sufficient in managing it. He expected actions to be taken in relation to standing laws, which required tanks to be emptied and other actions. He noted that the suspected leak amounted to approximately 1,300 gallons each year and could potentially continue for many years. He did not feel it was reasonable to expect the pump and treat systems to remain in continual operation for that span of time. He wanted to see an action plan and wondered if it would take an outside mandate or requirement for that to be produced. He considered possibilities of actions that could be taken, such as gamma borehole logging to track movement.

Carrie reiterated that the potential leak had not been deemed an additional risk to the public or workforce as it could not rise from the soil and was contained within already-contaminated soil. Furthermore, she clarified that soil monitoring did not show the leak, though it could be masked by other contaminants in the area. DOE was taking a conservative approach by assuming there was a leak altogether.

Steven Lowe, Ecology, agreed with Gerry's sentiment. He felt that the attitude that a leak into the soil was acceptable did not seem right. He asked about clarification regarding the frequency for receiving and assessing monitoring well data as well as the pump and treat operational frequency. Carrie clarified that the leak was not considered to be acceptable, but instead that the priority in operations were based upon an assessment of risks. As an example, she noted that prioritizing the DFLAW program would allow them to remediate more waste more quickly than shifting infrastructure to the B Farm, which would take more than two years before work in B-109 retrieval could begin. She further clarified that there were no risks in

regard to the Hanford Site that were considered acceptable, but higher risks demanded higher priority in actions taken.

Jeff believed that the topic of priorities merited further discussion by the HAB, not only in regard to B-109, but in regard to the tradeoff for other SSTs that may leak versus continuing treatment operations. Jeff asked for clarification on the liquid content of B-109. It was clarified that it amounted to approximately 13,000 gallons of interstitial liquid and 2,000 gallons of supernatant, totaling 15,000 gallons of liquid waste.

Jeff asked if the chemistry of the leak was known. Carrie clarified that it was, but not immediately available. She intended to distribute that information through the HAB facilitation team following the briefing. Jeff clarified that he would be interested in knowing if the chemistry could affect the mobilization of contaminants in the area. He noted that there was an SST liquid retrieval study released in 2020, among other studies, and wondered what Carrie thought to be the top contenders for future retrieval methods. She noted that they were continuing to assess options for all tanks, but reiterated the idea of priorities, noting substantial challenges in getting increasingly small amounts of liquids from tanks, as the majority of liquid waste was already retrieved.

Shelley wanted to further understand the contents of Hanford's leak response plan, wondering if the pump and treat system was a fallback. She wanted clarification on the route of decision making on leaks, nothing that this leak felt written off based on the lack of overall response. She hoped to hear Ecology's thoughts on the subject.

Kyle Rucker, Ecology, stated that Ecology expects DOE to make the initial response. Carrie clarified that, after DOE's initial notification, it works with Ecology on that response, which was still in development during the briefing. She was willing to provide an additional briefing on the intended response, once it was determined. Shelley noted that she would also like a broader discussion in response planning, rather than specific to B-109.

Rob pointed out that there could be many potential retrieval technologies that have not been examined or considered. He noted that there are many other industries that deal with salt cake retrieval and that Hanford was not especially unique in that regard, outside of radiological contamination. He felt that better means of dealing with leaking tanks could be found and that not all options have been exhausted. Carrie clarified that DOE was looking at other alternatives and weighing the options against other priorities, using the example of an evaporator method used in another tank. She stated that decisions come down to the availability of in-place infrastructure and need versus other priorities.

Ruth noted that within the chat James Alzheimer, Ecology, stated that there exists a TPA primary document for a catch tank leak response plan, but there was no SST Leak Response Plan. James explained that B-109 was not the first leaking tank for which there was no clear plan of action, and expressed the need for a plan for tanks going forward, considering the likelihood that waste could remain in SSTs for the following 50 years or longer.

Steven added that, in regard to detection and response to leaks, there previously existed an emergency pumping guide for tank leaks that contained detailed responses for various tanks but did not directly address the types of leaks that ultimately occurred. As a result, DOE issued a more generic leak response plan that still required review and approval by Ecology.

Gerry stated that greater urgency should be placed on advice on removal of liquids, options presented by the Test Bed Initiative, or safe offsite disposal. He felt that the lack of a response plan led to an inevitability of lacking equipment and options for responding to SST and DST leaks. Shelley agreed,

stating that it was time to take a closer look at the program to develop values and policy that could help shape a new leak response and detection plan to get ahead of potential future issues.

Next Steps

Bob determined that there was more that needed to be learned about existing and planned leak response plans and wished to add the topic as an action item.

Rob hoped to get an inventory of waste within the SSTs, as it would be necessary in development of advice on the subject.

Government Accountability Office Report

Bob initiated discussion on the Government Accountability Office (GAO) report that was recently released and included findings on Hanford's tank waste management program. He thought the overview provided in the GAO report could serve as an effective introduction on the topic for new HAB members.

Bob reviewed the GAO's findings, which concluded that:

- The DOE Office of Environmental Management (DOE-EM) should seek the assistance of an independent mediator to reach an agreement with Ecology on a process for assessing contaminated soil and determining the role of the Nuclear Regulatory Commission (NRC) in that process;
- DOE-EM should develop a long-term plan for DOE's waste retrieval and tank closure mission at Hanford; and
- DOE-EM should assess DOE's efforts to involve stakeholders in the Hanford tank closure process to ensure that DOE engages them in the decision-making process, communicates with them throughout the process in a way that addresses their concerns regarding technical challenges, and provides them with the transparent information about the science and rationale behind decisions.

As the committee discussed the findings and options for responding the findings, Ruth captured the identified problems; potential solutions and actions; concerns; and known or unknown information. The resulting document is provided as *Appendix A* to this document.

Regulatory Perspectives

Suzanne Dahn, Ecology, thought that the HAB's examination of the report, questions, and follow up actions were helpful. She thought that commenting on and being involved in closure plans going forward would be helpful and was hopeful that HAB input on tank farm-related issues would be beneficial.

Next Steps

Bob noted that, as the committee discovers tank waste-related documents outside of their standard sources, such as the GAO report, the committee should take the time to examine them as they may affect future committee activities and decision. He thought the second recommendation would benefit from further discussion, worrying that the present focus on the DFLAW project would cause other emerging issues not to receive the appropriate level of attention. He expected to revisit the items that Ruth captured, provided in *Appendix A*, in future calls or meetings.

Tank Integrity

Bob discussed the draft tank integrity program advice in development by the TWC. He provided an overview of its contents along with how it was relevant to the earlier discussion on the B-109 SST leak. He invited comments and ideas on the next steps in development of the advice.

Liz noted that, based on the previous B-109 discussion, that the HAB has not seen improvement in the Hanford's ability to respond to a leaking tank. It was not immediately clear if or how the advice should be edited to reflect that. She wished to hold a facilitated meeting to further discuss the topic. Bob agreed that it was a longer-term issue that required further comment.

Rob noted the challenges involved in inspecting and analyzing the contents of the tanks sitewide. The uncertainties involved in tank waste presented risk and, as a result, he believed the best solution was to retrieve and vitrify high-level waste (HLW) from within the tanks. He requested to be part of the IM team developing the advice.

Gary, in response to Liz's request, noted that he believed that Brian would likely be willing to meet with the IM team to hone the advice and that he could assist in working out a schedule for that discussion. Brian agreed, clarifying that he was able to provide technical information that would be important for consideration in the advice development, but would have no say or input in the advice development itself.

Bob requested that IM team members provide Ruth potential framing questions to assist Brian in preparation. Ruth agreed to send out a poll the following day. Suzanne noted that an Ecology representative may also be available to provide information.

Shelley expressed her appreciation of the representatives' willingness to support their advice development, however, she wondered if they should instead be providing presentations to the TWC as a whole. She worried that limiting that information to the IM team would exclude other board members and affect the new members' ability to become informed and educated on the topics that the committee examines. Susan Leckband, Washington League of Women Voters and TWC vice chair, agreed, stating that the process seemed to be going backwards, leapfrogging over committee members.

Ruth asked for clarification in the purpose of inviting SMEs to the IM meeting. Bob clarified that it was to provide technical information that would be necessary in development of advice, pointing out assumptions or data that was not correct, and would have no input in the development of advice.

Ruth proposed options for scheduling the meeting, and the committee agreed to utilize a committee call placeholder for the discussion, allowing all committee members to listen.

Susan posed a related question to Gary, asking him to further define "actionable" in relation to advice; she felt that every piece of advice issued by the HAB was actionable and felt that DOE chose not to act upon the pieces of advice based on convenience. She stated that Gary did not have to answer at that time.

Jeff provided a list of facets he wished to examine further in development of the tank integrity program advice, which read:

- "Taking action to prevent tanks from failing (actions for SSTs and DSTs are different)"
- "Increasing confidence that tanks won't fail (so we don't build new tanks if we don't need them)"
- "Knowing when a tank fails"
- "Knowing what we want to do when SSTs or DSTs fail (decision rules and prioritization)"
- "Making tank failure not matter because WTP has treated everything already (but it'll take 40 years once it's up and running so expect more tanks to fail in the meantime)"

He believed that there would only be time to examine one item from his list in the time available for the following meeting. He noted that he had also developed a B-109 strategy matrix that he wished to share.

Jacob Reynolds, Non-Union, Non-Management Employees, relayed his thoughts on a point made in the draft advice. He felt that the advice point that read "DOE needs to develop a modeling system for SSTs

which addresses the following concerns...” asked for too many separate items and wanted to IM to consider that in further advice development.

Pam noted that she was glad that the committee would be able to listen to the IM team discussion on advice development. She took the opportunity to remind the committee that, based on prior discussion with Brian Vance, DOE, that should Hanford be required to build a new tank that the DFLAW project would come to a “screeching halt” as the tank construction was prohibitively expensive.

Shelley expressed that she believed that tank integrity was needed. She thought that issues of leak detection and response needed to be examined as soon as practical. With only three leak detectors in the annulus, shown to only be capable of detecting large leaks, the current program was not in an acceptable state. She felt that the committee needed to discuss what had been done on the site and what should be considered acceptable. She suggested the idea of framing discussions around leak detection with a follow up leak response. She did not find it acceptable that leaks are just identified and acknowledged; she wished to address the need for response.

Bob proposed that the following call be focused on the first three facets of the tank integrity program that Jeff proposed, leaving the others for a later date.

Susan noted that the third point may be a topic for examination by the Public Involvement and Communication Committee (PIC).

Committee Business

Bob requested that the committee members submit topics that they hoped to learn about prior to the following TWC call. He reminded committee members that Brian Vance requested advice for topics that were two to three years out.

Bob discussed the schedule for upcoming calls and meetings with Ruth and Gary.

Liz requested additional time for open forum in the following meeting due to the lack of one in the current meeting. She noted that Hanford Challenge has recently released and Frequently Asked Questions article on tank waste, clarifying its position on it. It was available on the Hanford Challenge website.

Liz asked for further clarification on how to organize an unfacilitated meeting, wanting to ensure she was aware of how best to use the freedom granted by that option. Ruth suggested adding 15 minutes to the next TWC call to discuss those logistics.

Attachments

Attachment 1: Tank Waste Committee Meeting Agenda

Attachment 2: Draft Meeting Summary from TWC February Meeting

Attachment 3: Immobilized Low-Activity Waste Transporter System

Attachment 4: Single-Shell Tank Retrieval Status Update and Path Forward

Attachment 5: Government Accountability Office Report to Congressional Committees: Hanford Cleanup, DOE’s Efforts to Close Tank Waste Farms Would Benefit from Clearer Legal Authorities and Communication

Attachment 6: Tank Integrity Draft Document

Attachment 7: Tank Waste Committee Work Plan

Attachment 8: Current HAB Issue Manager Team List

Attendees

Board Members and Alternates:

Shelly Cimon, Primary	Susan Coleman, Primary	Rob Davis, Primary
Pam Larsen, Primary	Liz Mattson, Primary	Gerry Pollet, Primary
Jacob Reynolds, Primary	Dan Solitz, Primary	Bob Suyama, Primary
Jeff Burright, Alternate	Marissa Merker, Alternate	Mason Murphy, Alternate
Chris Sutton, Alternate		

Others:

Ricky Bang, DOE	James Alzheimer, Ecology	Peter Bengtson
Stan Branch, DOE	Suzanne Dahl, Ecology	Gabriel Bohnee
Brian Harkins, DOE	Ryan Miller, Ecology	Matthew Campbell
Carrie Meyer, DOE	Kyle Rucker, Ecology	Rose Ferri, Yakama Nation
Bibek Tamang, DOE	Ginger Wireman, Ecology	Tyree Geoffrey
Gary Younger, DOE	Steven Lowe, Ecology	Dana Gribble, HMIS
		Destry Henderson
		Denise Jones
		Kris Lind
		Joan Lucas
		Carolyn Noonan
		Richard Valle
		KB
		Simone Anter, Columbia RiverKeeper
		Abigail Zilar, GSSC for DOE
		Coleen Drinkard, HMIS
		Peggy Hamilton, WRPS
		Li Wang, YN ERWM
		Kelsey Shank, TheEDGE
		Scott Fillmon, HAB Facilitation Team

		Ruth Nicholson, HAB Facilitation Team
		Joshua Patnaude, HAB Facilitation Team

Note: Participants for this virtual meeting were asked to sign in with their name and affiliation in the chat box of Microsoft Teams. Not all attendees shared this information. The attendance list reflects what information was collected at the meeting.

Appendix A
HAB – TWC Committee – Discussion – GAO Report on Tank Closure – 12 May 2021

HAB – TWC Committee – Discussion – GAO Report on Tank Closure – 12 May 2021

PROBLEMS	SOLUTIONS	CONCERNS	DATA
Hanford Tank Closure and Waste Management EIS (NEPA) did not address leaks from tanks (or were they included?). State adopted as SEPA. State has RCRA authority. Conclusion was EPA under CERCLA would address leaked tank waste. Differences between RCRA & CERCLA re: cleanup. Will this be addressed by holistic negotiations?	Stakeholder involvement. A check box or significant involvement? (For PIC & TWC) Advice? Recommendations? Flowchart?	Bring out technical challenges and concerns early, e.g., C Farm WIR. Helped to make progress at C Farm PA. Not done with C Farm yet. Need to stay involved in this.	Non-HLW definition. 435.1. Use at other sites. A point where a decision will be made to use it or not. Need to give public input on pieces & positions on HAB. Urgent repercussions. (TWC & PIC)
Need to understand PA and WIR process so we understand issues at a policy level	NRC felt managing a waste site and managing standards was out of its ballywick. Need to form a new agency to fill the NRC role? Or give it to another organization?	A/AX Farm PA has not had discussions about closure similar to C Farm. What are lessons learned from C Farm? Are they applicable to A/AX?	Does NRC play a role in soil? Is it voluntary consultation with a limited scope? What if NRC is not satisfied? How would disagreements be addressed?
NRC and ECY says DOE WIR is needed for tanks & wastes that have leaked.	HAB could articulate its expectations for a response to GAO report, especially recommendation #3	Want to see DOE bring stakeholders along now similarly to in the past. Or is it just share information, not engagement?	C Farm to be first to be closed. Has closure documents (RCRA closure plan) that will include addressing leaks. Landfill closed or clean closed (which is feasible)?
Need good closure process so we don't go sideways on cleanup	Need someone who has oversight role to lock in process for evaluation. Assessment thru characterization & disposition. Codify the process so it can be	C Farm PA had a technical committee to work on this. HAB picked 2 people to engage in this process but they didn't see draft before it went to HQ.	How federal government is going about reclassification of waste. Federal Register or WIR approach. NRC consultation or a different relationship as with other DOE sites.

PROBLEMS	SOLUTIONS	CONCERNS	DATA
	followed by all. Mission & goals with a driver. A national dialogue?		
	COTW to talk about this – small looking at contaminated soil or broader looking at closure process?	Are we talking to the people in DOE who are making the decisions?	Don't have a cost on the capping for tank farms.
	Engage Todd Martin	What happens to the GAO report? Does anybody track it? There is a response from DOE at back of report. What is the next step? Whose action is next?	Look at page 43 in document about thoughts on transparency
	HAB suggest a local tank closure process (not national programmatic)	GAO writes a report that floats around for a couple of years & don't check if things have changed or been fixed (not timely). IG is listened to. Appreciate NRC engagement.	Pg 44 – recommendation for Congressional action to clarify if WIR is the right way to do it
	Address this by looking at shortfalls. Look at Hanford. Could be programmatic and implementation both.	Do not like piecemeal approach.	
	Public conversation about cleanup being taxpayer funded. What is appropriate? (not just budget year by budget year) How do we have that conversation? Commitment to something that works over time.	GAO is listened to by Congress	

PROBLEMS	SOLUTIONS	CONCERNS	DATA
	Ike White/DOE response in GAO report. Ask if DOE can give plans on how they will implement recommendations with which DOE concurs? HAB to ask what it can do to help implement the DOE response.	Not excited at programmatic level. HAB doesn't have that kind of influence at HQ. What can HAB influence? Focus more locally? Eg, suggest a local process for tank closure.	
	Work on Recommendation #3	How funding plays a role in cleanup long term and in tank closure. Wide variety of assumptions how will cleanup be funded, priorities, and ability to make long-term plan for tank closure	
	Check in on swim lanes for tank farm closure. How is public involved in those boxes? Discussion to see where we are & are we falling behind (or haven't got there yet)	No public acknowledgement of missteps that wasted public money. Preventative measures to stop this. Reluctance to spend public money to do cleanup correctly. Are our standards too high? Systemic issues?	
	Talk to PIC about this re: path forward		